

Claims

[c1] What is claimed is:

1. A capacitive acceleration sensor comprising:
a non-single-crystal-silicon-based substrate;
a polysilicon beam structure having a movable section,
the movable section comprising a movable electrode;
a polysilicon supporter positioned on the non-single-crystal-silicon-based substrate for fixing the beam
structure and forming a distance between the beam
structure and the non-single-crystal-silicon-based sub-
strate;
a stationary electrode positioned on the non-single-crystal-silicon-based substrate and opposite to the
movable section of the beam structure, the stationary
electrode and the movable electrode constituting a plate
capacitor; and
a thin film transistor (TFT) control circuit positioned on
the non-single-crystal-silicon-based substrate and elec-
trically connected to the plate capacitor.

[c2] 2. The capacitive acceleration sensor of claim 1 wherein
the non-single-crystal-silicon-based substrate is a glass
substrate.

- [c3] 3. The capacitive acceleration sensor of claim 2 wherein the TFT control circuit is a low temperature polysilicon TFT control circuit.
- [c4] 4. The capacitive acceleration sensor of claim 1 wherein the non-single-crystal-silicon-based substrate is a quartz substrate.
- [c5] 5. The capacitive acceleration sensor of claim 4 wherein the TFT control circuit is a high temperature polysilicon TFT control circuit.
- [c6] 6. The capacitive acceleration sensor of claim 1 wherein the stationary electrode comprises aluminum (Al), titanium (Ti), platinum (Pt), or alloys.
- [c7] 7. The capacitive acceleration sensor of claim 1 wherein the beam structure and the supporter are formed simultaneously.
- [c8] 8. The capacitive acceleration sensor of claim 7 wherein the beam structure and the supporter both comprise polysilicon.
- [c9] 9. The capacitive acceleration sensor of claim 1 wherein the movable electrode comprises doped polysilicon or a conductive material.

- [c10] 10. The capacitive acceleration sensor of claim 1 wherein the non-single-crystal-silicon-based substrate further comprises a thin film transistor display region for displaying a variation of pressure detected by the capacitive acceleration sensor.
- [c11] 11. A capacitive acceleration sensor comprising:
 - an insulating substrate;
 - a cantilever beam structure positioned on the insulating substrate having a movable section, the movable section comprising a movable electrode;
 - a stationary electrode positioned on the insulating substrate and opposite to the movable section of the cantilever beam structure, the stationary electrode and the movable electrode constituting a plate capacitor; and
 - a control circuit positioned on the insulating substrate and electrically connected to the plate capacitor.
- [c12] 12. The capacitive acceleration sensor of claim 11 wherein the stationary electrode comprises aluminum (Al), titanium (Ti), platinum (Pt), or alloys.
- [c13] 13. The capacitive acceleration sensor of claim 11 wherein the cantilever beam structure comprises polysilicon.
- [c14] 14. The capacitive acceleration sensor of claim 11 wherein the movable electrode comprises doped polysilicon or a

conductive material.

- [c15] 15. The capacitive acceleration sensor of claim 11 wherein the insulating substrate is a glass substrate.
- [c16] 16. The capacitive acceleration sensor of claim 15 wherein the control circuit is positioned on the glass substrate and the control circuit comprises a low temperature polysilicon thin film transistor control circuit.
- [c17] 17. The capacitive acceleration sensor of claim 11 wherein the insulating substrate is a quartz substrate.
- [c18] 18. The capacitive acceleration sensor of claim 17 wherein the control circuit is positioned on the quartz substrate and the control circuit comprises a high temperature polysilicon thin film transistor control circuit.
- [c19] 19. The capacitive acceleration sensor of claim 11 wherein the control circuit is positioned on a printed circuit board (PCB) electrically connected to the plate capacitor via a flexible printed circuit (FPC) board.
- [c20] 20. The capacitive acceleration sensor of claim 11 wherein the control circuit is positioned on a flexible printed circuit (FPC) board, the control circuit being electrically connected to the plate capacitor via the flexible printed circuit board.

[c21] 21. The capacitive acceleration sensor of claim 11 wherein the insulating substrate further comprises a thin film transistor display region for displaying a variation of pressure detected by the capacitive acceleration sensor.